MINERALIUM DEPOSITA

International Journal for Geology, Mineralogy, and Geochemistry of Mineral Deposits

Official Bulletin of the Society for Geology Applied to Mineral Deposits

Founded in 1966 by G. C. Amstutz, A. Bernard, K. C. Dunham, P. Evrard, E. Grip, G. L. Krol, I. de Magnee, A. Maucher, P. Ramdohr †, P. Routhier and P. Zuffardi

Volume 24, 1989

Managing Editors

D. D. Klemm
Institut für Allgemeine und Angewandte Geologie der Universität München
Luisenstraße 37
D-8000 München 2

Hans-J. Schneider
Institut für Angewandte Geologie
Freie Universität Berlin
Wichernstraße 16
D-1000 Berlin 33

Editorial Office
Institut für Allgemeine und Angewandte Geologie der Universität München
Luisenstraße 37
D-8000 München

Editorial Board

G. C. Amstutz
Mineralogisch-petrographisches Institut der Universität, Postfach 10 40 40, D-6900 Heidelberg 1, FRG

A. C. Brown
Ecole Polytechnique, Université de Montreal, C.P. 6079 Succursale "A", Montreal, Quebec, H3C 3A7, Canada

Ei Horikoshi
Department of Earth Sciences, Toyama University, Gofuku, Toyama 930, Japan

P. Omenetto
Istituto di Mineralogia e Petrologia, Corso Garibaldi, 37 I-35100 Padova, Italy

M. Stemprok
Geological Survey Prague, Malostranské Nam. 19, 11821 Praha 1, Czechoslovakia

M. J. Viljoen
Johannesburg Consolidated Investment Company, Ltd., P.O. Box 976, Randfontein, Transvaal 1760, S. Africa

Advisory Board

A. Arribas
Instituto de Mineralogia, Universidad de Salamanca, Spain

P. A. Bailly
4510 W. Lakeridge Road, Denver, CO 80219, USA

M. K. de Brodtkorb
Paso 258-9A, 1640 Martinez, Prov. de Buenos Aires, Argentina

M. Drovenik
Odsek za geologijo, YU-61000 Ljubljana, Askerceva 20, Yugoslavia

P. Evrard
Lab. de prospection minière, 45 avenue des Tilleuls, B-4000 Liège, Belgium

G. Friedrich
Institut für Mineralogie, RWTH Aachen, Wüllnerstr. 2, D-5100 Aachen, FRG

V. Köppel
Institut für Kristallographie und Petrographie, ETH Zürich, Sonneggstr. 5, CH-8092 Zürich, Switzerland

I. B. Lambert
Elisian Resources Pty. Ltd., 2 Bromwick Place, Garran, Canberra, ACT 2605, Australia

U. Petersen
Harvard University, Department of Geological Sciences, Hoffman Laboratory, 20 Oxford Street, Cambridge, Mass 02138, USA

A. H. Rankin
Imperial College, Mining Geology Division, Royal School of Mines, Prince Consort Road, London SW7 2BP, Great Britain

E. Stumpfl
Institut für Mineralogie und Petrologie, Montan-Universität, A-8700 Leoben, Austria

Springer-Verlag
Berlin Heidelberg New York London Paris Tokyo Hong Kong

Copyright

Submission of a manuscript implies: that the work described has not been published before (except in the form of an abstract or as part of a published lecture, review, or thesis); that it is not under consideration for publication elsewhere; that its publication has been approved by all coauthors, if any, as well as by the responsible authorities at the institute where the work has been carried out; that, if and when the manuscript is accepted for publication, the authors agree to automatic transfer of the copyright to the publisher; and that the manuscript will not be published elsewhere in any language without the consent of the copyright holders. All articles published in this journal are protected by copyright, which covers the exclusive rights to reproduce and distribute the article (e.g., as offprints), as well as all translation rights. No material published in this journal may be reproduced photographically or stored on microfilm, in electronic data bases, video disks, etc., without first obtaining written permission from the publisher.
The use of general descriptive names, trade names, trademarks, etc., in this publication, even if not specifically identified, does not imply that these names are not protected by the relevant laws and regulations.
While the advice and information in this journal is believed to be true and accurate at the date of its going to press, neither the authors, the editors, nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Special regulations for photocopies in the USA: Photocopies may be made for personal or in-house use beyond the limitations stipulated under Section 107 or 108 of U.S. Copyright Law, provided a fee is paid. This fee is US $ 0.20 per page, or a minimum of US $ 1.00 if an article contains fewer than five pages. All fees should be paid to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970, USA, stating the ISSN 0026-4598, the volume, and the first and last page numbers of each article copied. The copyright owner's consent does not include copying for general distribution, promotion, new works, or resale. In these cases, specific written permission must first be obtained from the publisher.

Springer-Verlag / Berlin Heidelberg New York London Paris Tokyo Hong Kong
Printed in Germany by Triltsch, Würzburg – © Springer-Verlag, Berlin Heidelberg 1989
Springer-Verlag GmbH & Co. KG, D-1000 Berlin 33

Contents

Originals

Akande O, Zentilli M, Reynolds PH: Fluid inclusion and stable isotype studies of Pb-Zn-fluorite-barite mineralization in the lower and middle Benue Trough, Nigeria 183
Ashley PM, Plimer IR: "Stratiform skarns" – A re-evaluation of three eastern Australian deposits 289
Ashworth JR → Pointer CM
Ataii B → Neinavaie H

Beeson R, Berg RC, Crase NJ: Lithogeochemical exploration for shale-hosted lead-zinc deposits: Case studies from the McArthur River and MT Isa Districts, nothern Australia 299
Beran A → Neinavaie H
Berg RC → Beeson R
Bernat M, Causse C, Perseil EA, Féraud G: Variations of element distribution in ferromanganese nodules and its bearing on growth rates 258
Boulegoue J → Dejonghe L

Causse C → Bernat M
Corazza M → Lattanzi P
Corsini F → Lattanzi P
Cortecci G, Fontes J-C, Maiorani A, Perna G, Pintus E, Turi B: Oxygen, sulfur, and strontium isotope and fluid inclusion studies of barite deposits from the Iglesiente-Sulcis mining district, Southwestern Sardinia, Italy 34
Crase NJ → Beeson R
Craw D → McKeag SA

Dahanayake K, Subasinghe SMND: Secondary phosphate mineralization in a karstic environment in central Sri Lanka 169
Dejonghe L, Boulegue J, Demaiffe D, Letolle R: Isotope geochemistry (S, C, O, Sr, pb) of the Chaudfontaine mineralization (Belgium) 132
Demaiffe D → Dejonghe L

Eisenlohr BN, Groves D, Partington GA: Crustal-scale shear zones and their significance to Archaean gold mineralization in Western Australia 1
El Goresy A → Missack E
Ezzeldin Hilmy M, Osman A: Remobilization of gold from a chalcopyrite-pyrite mineralization Hamash gold mine, Southeastern Desert, Egypt 244

Féraud G → Bernat M
Fitzell M → McArdle P
Fontes J-C → Cortecci G
Friedrich G → Sänger-von Oepen P

Gallagher V: Geological and isotope studies of microtonalite-hosted W-Sn mineralization in SE Ireland 19
Göd R: The spodumene deposit at "Weinebene", Koralpe, Austria 270
Groves D → Eisenlohr BN
Gruenewaldt G von, Hulbert LJ, Naldrett AJ: Contrasting platinum-group element concentration patterns in cumulates of the Bushveld Complex 219

Hallberg A: Metal sources in the Early Proterozoic Svecofennian terrain of central Sweden: Pb isotope evidence 250
Hulbert LJ → Gruenewald G von

Kennan PS → McArdle P
Krupp RE: Paragenesis and conditions of formation of the Moschellandsberg mercury deposit, SW Germany 69
Kucha H: Macrotextures, microtextures, and carbonate-sulfide relationships in stratiform, carbonate-hosted Zn-Pb orebodies of Silvermines, Ireland 48

Latouche L → Perseil EA
Lattanzi P, Corazza M, Corsini F, Tanelli G: Sulfide mineralogy in the polymetallic cassiterite deposits of Dachang, P. R. China 141
Letolle R → Dejonghe L
Lippolt HJ → Mertz DF
Lottermoser BG: Rare earth element study of exhalites within the Willyama Supergroup, Broken Hill Block, Australia 92

Maiorani A → Cortecci G
Marignac Ch: Sphalerite stars in chalcopyrite: Are they always the result of an unmixing process? 176
McArdle P, Fitzell M, Oosterom MG, O'Connor PJ, Kennan PS: Tourmalinite as a potential host rock for gold in the Caledonides of southeast Ireland 154
McKeag SA, Craw D, Norris RJ: Origin and deposition of a graphitic schist-hosted metamorphogenic Au-W deposit, Macraes, East Otago, New Zealand 124
McQueen KG: Sediment geochemistry and base metal sulphide mineralisation in the Quidong Area, southeastern New South Wales, Australia 100
Mertz DF, Lippolt HJ, Schnorrer-Köhler G: Early Cretaceous mineralizing activity in the St. Andreasberg ore district (Southwest Harz, Federal Republic of Germany) 9
Missack E, Stoffers P, El Goresy A: Mineralogy, parageneses, and phase relations of copper-iron sulfides in the Atlantis II deep, Red Sea 82

Naldrett AJ → Gruenewald G von
Neinavaie H, Thalmann F, Ataii B, Beran A: Wolframite- and scheelite-bearing carbonate rocks of the Nock mountains, Austria: A new type of tungsten mineralization in the Eastern Alps 14
Norris RJ → McKeag SA

O'Connor PJ → McArdle P
Oosterom MG → McArdle P
Osman A → Ezzeldin Hilmy M
Osman A, Piestrzyński A: Mechanism of sulfide mineralization through successive metasomatic replacement stages of zoned host dolomite in Cracow-Silesian Zn-Pb seposits (Mississippi Valley type), Pomorzany Mine, Poland 56

Partington GA → Eisenlohr BN
Patočka F, Vrba J: The comparison of strata-bound massive sulfide deposits using the fuzzy-linguistic diagnosis of the Zlaté Hory deposits, Czechoslovakia, as an example 192
Pattrick RAD, Russell MJ: Sulphur isotopic investigation of Lower Carboniferous vein deposits of the British Isles 148
Perna G → Cortecci G
Perseil EA → Bernat M
Perseil EA, Latouche L: Découverte de microstructures de nodules polymétaliques dans les minéralisations manganésifères métamorphiques de Falotta et de Parsettens (Grisons-Suisse) 111
Pesquera A, Velasco F: The Arditurri Pb-Zn-F-Ba deposit (Cinco Villas massif, Basque Pyrenees): A deformed and metamorphosed stratiform deposit 199
Petrascheck WE: The genesis of allochthonous karst-type bauxite deposits of southern Europe 77
Piestrzyński A → Osman A
Pintus E → Cortecci G
Plimer IR → Ashley PM
Pointer CM, Ashworth JR, Simpson PR: Genesis of coffinite and the U-Ti association in Lower Old Red Sandstone sediments, Ousdale, Caithness, Scotland 117
Pollard PJ, Taylor RG, Tate NM: Textural evidence for quartz and feldspar dissolution as a mechanism of formation for Maggs Pipe, Zaaiplaats tin mine, South Africa 210

Reynolds PH → Akande O
Russell MJ → Pattrick RAD

Sänger-von Oepen P, Friedrich G, Vogt JH: Fluid evolution, wallrock alteration, and ore mineralization associated with the Rodalquilar epithermal gold-deposit in southeast Spain 235
Simpson PR → Pointer CM
Schellmann W: Composition and origin of lateritic nickel ore at Tagaung Taung, Burma 161
Schnorrer-Köhler G → Mertz DF
Schwartz MO: Determining phase volumes of mixed CO_2–H_2O inclusions using microthermometric measurements 43
Scott KM: Dolomite compositions as a guide to epigenetic copper mineralization, Mount Isa Inlier, NW Queensland 29
Stoffers P → Missack E
Subasinghe SMND → Dahanayake K

Tanelli G → Lattanzi P
Tate NM → Pollard PJ
Taylor RG → Pollard RJ
Thalmann F → Neinavaie H
Trepka-Bloch C: Volcanogenic and tectonic features of the Rakkejaur sulfide deposit, Skellefte district, Sweden 279
Turi B → Cortecci G

Velasco F → Pesquera A
Vogt JH → Sänger-von Oepen P
Vrba J → Patocka F

Zentilli M → Akande O

Discussion

Bielicki K-H, Tischendorf G: Discussion of results presented by Höhndorf and Dill: Some aspects of lead-lead model ages of ore mineralizations from the western edge of the Bohemian Massif (F.R. Germany) 62

Dill H → Höhndorf A

Höhndorf A, Dill H: Reply on the discussion by K.-H. Bielicki and G. Tischendorf 65

Tischendorf G → Bielicki K-H

Short note

Arne DC, Kissin SA: The significance of "diagenetic crystallization rhythmites" at the Nanisivik Pb-Zn-Ag deposit, Baffin Island, Canada 230

Kissin SA → Arne DC

Announcements 67, 123, 233, 307

Book reviews 33, 47, 66, 67, 81, 110, 123, 229, 257, 269, 278, 288

Society news 68, 160, 234, 308